

REMARKS

Claims 1-16 were pending in the application prior to the present amendment.

Claims 1-6, 11-12 and 15-16 are herein cancelled.

Claims 7, 9, 10, 13 and 14 are herein amended.

Claims 17-24 are herein added.

Thus, Claims 7-10, 13-14 and 17-24 will be pending in the application after entry of the present amendment.

Art Rejections

Claims 1, 5, 7, 9 and 15-16 were rejected under 35 U.S.C. Section 102(a) as being anticipated by Brunner et al. (USPN 6,369,830).

Claims 2, 6 and 8 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Brunner et al. (USPN 6,369,830) in view of the on-line publication entitled "Advanced Graphics Programming Techniques Using Open GL" by McReynolds et al.

Claims 3, 4, 10-11 and 13 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Brunner et al. (USPN 6,369,830) in view of Tang et al. (US Patent Publication No. 2003/0160789).

Claim 12 is rejected under 35 U.S.C. Section 103(a) as being unpatentable over Brunner et al. (USPN 6,369,830) in view of Tang et al. (US Patent Publication No. 2003/0160789), and further in view of Marino (US Patent Publication No. 2003/0137523).

Claim 14 is rejected under 35 U.S.C. Section 103(a) as being unpatentable over Brunner et al. in view of Tang et al., and further in view of Baker ("What's New a Report from SIGGRAPH 98").

These rejections are respectfully traversed based on the following reasoning.

Brunner et al. (hereinafter referred to simply as "Brunner") discloses a system and method for rendering translucent layers. Figure 6 describes a process for mixing the color

of pixels corresponding to a single pixel position. See also Col. 5, lines 40-43 and lines 60-65.

At Col. 6, lines 12-13, Brunner teaches that “The steps of FIG. 6 may be repeated for each pixel in the image, as needed. Pixels may be processed in any order.” Thus, according to the methodology of Brunner, layer merging is the inner loop and pixel position movement is the outer loop. In other words, all the layers are merged together at a given pixel position before progressing to a next pixel position.

At Col. 5, lines 31-33, Brunner teaches that:

“In another embodiment, two or more accumulators 102 are provided, so that the steps of Fig. 6 are performed concurrently for a number of pixels.”
[Underline added]

The “number of pixels” mentioned here should be interpreted in light of Brunner’s teachings at the end of Col. 3 and at Col. 9, lines 22-29:

“Accumulator 102, in one embodiment, is a register or memory location for temporary storage of values being calculated. As will be described below, more than one accumulator 102 may be provided, and in one embodiment, the present invention is able to process several pixels in parallel by employing multiple accumulators 102.” (Col. 3, line 64 through Col. 4, line 2) [Underline added]

“In one embodiment, as described above, several pixels may be processed simultaneously. For example, in one embodiment, eight pixels are processed in parallel, using a processor 101 that is capable of accumulating eight values simultaneously, such as AltiVec or MMX-enabled processors. Parallel processing may also be advantageous when the invention is implemented on systems having a large number of execution units, such as the IA-64 architecture from Intel Corporation.” (Col. 9, lines 22-29) [Underlining added]

In this light, it is clear that Brunner imagines the “number of pixels” to be no more than several pixels. Thus, the parallel embodiment of Brunner’s methodology may be characterized as progressing through all the layers for a given group of several pixels before advancing to the next group.

In contrast, claim 17 recites:

A system comprising: an accumulation buffer; an image buffer; and a mixing unit configured to (a) read a first stream of image pixels

corresponding to an image X_K from the image buffer, (b) read a second stream of pixels corresponding to an image A_K from the accumulation buffer, (c) blend each image pixel of the image X_K with the corresponding pixel of the image A_K based on an alpha value provided with the image pixel, and thus, generate a third stream of output pixels defining an image A_{K+1} , and (d) transfer the third stream of output pixels to the accumulation buffer; wherein the mixing unit is further configured to perform (a), (b), (c) and (d) for each image in a sequence of images X_K , $K=0, 1, 2, \dots, N-1$, wherein N is the number of images in the sequence.

This union of features is not taught or suggested in the cited references whether considered individually or in combination.

In particular, Brunner does not teach or suggest an accumulation buffer that serves as the locus of storage for images A_K between successive cycles of (a), (b), (c) and (d) as recited in claim 17. The accumulator 102 of Brunner does not have sufficient capacity to store an image A_K with pixels in correspondence to the image pixels of the image X_K as evidenced by the passage starting at Col. 3, line 64:

“Accumulator 102, in one embodiment, is a register or memory location for temporary storage of values being calculated. As will be described below, more than one accumulator 102 may be provided, and in one embodiment, the present invention is able to process several pixels in parallel by employing multiple accumulators 102.”

One or several registers is not sufficient to store a whole image. Thus, the accumulators of Brunner cannot be properly identified with the accumulation buffer as recited in claim 17.

In addition, claim 17 recites that “the mixing unit is further configured to perform (a), (b), (c) and (d) for each image in a sequence of images X_K , $K=0, 1, 2, \dots, N-1$, wherein N is the number of images in the sequence”. Thus, the mixing unit processes the pixel positions of the image X_K before advancing to the next image. As evidenced above, Brunner teaches away from such a mixing unit because the methodology of Brunner requires advancing from one pixel (or group of several pixels) to the next as the outer processing loop.

Thus, claim 17 and its dependents are patentably distinguished over the cited references at least for the reasons given above.

Claim 7 recites features similar to claim 17. Thus, claim 7 and its dependents are patentably distinguished over the cited references at least for the reasons given above.

Claim 23 also recites features similar to claim 17. Thus, claim 23 and its dependent claim 24 are patentably distinguished over the cited references at least for the reasons given above.

CONCLUSION

In light of the foregoing amendments and remarks, Applicant submits the application is now in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert & Goetzel PC Deposit Account No. 50-1505/5681-14000/JCH.

Also enclosed herewith are the following items:

- ☒ Return Receipt Postcard
- ☐ Petition for Extension of Time
- ☒ Notice of Change of Address

Respectfully submitted,

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